05-0040

Washington State Department of Transportation

Memorandum

August 2, 2005

Approval FHWA Michael R. Brower

TO: Don Petersen, FHWA
MS 0943

Date 8/23/2005

Concurrence

Date 8/3/05
Assistant State Designer Engineer

FROM: Ray Crumbley
360-705-7937
MS 47330

SUBJECT: Blanket Proprietary Item Request

The Northwest Region is requesting blanket proprietary approval for the following ITS materials for the 2005-2007 Biennium. The materials submitted are essential for synchronization with existing highway facilities in Northwest Region and essential for synchronization with existing implementations when Northwest and other region projects connect in the future. At this time the Department is in the process of pursing statewide standardization and inter-operability between all regions in the areas of Signal, Illumination and ITS system design.

We are requesting blanket proprietary approval for the items on the attached request dated June 27, 2005.

The technologies used in the attached items are constantly improving. As such, we are continually evaluating the needs of our system and the equipment that best serves those needs. If you have any questions or need additional information on this matter, please contact Steve Strand at 206-440-4475.

cc: Design File
attachment: NW Region ITS Proprietary Request, 2005-2007 Biennium

Washington State Department of Transportation

Memorandum

June 27, 2005

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TO: Jim Eastman, MS 47330
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THRU: Michael Forbis, MS 120
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Don Wills, MS 111
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FROM: James Sims / Steve Strand, MS NB82-125
(206) 440-4450 / (206) 440-4475

SUBJECT: **NW Region ITS Proprietary Request, 2005-2007 Biennium**

The NW Region is requesting proprietary approval of the following ITS and Signal materials for the 2005-2007 Biennium. The materials submitted are essential for synchronization with existing highway facilities.

We are requesting blanket proprietary approval for the following items:

The 170E CPU Module
Cohu Camera Assembly (I-View system)
Axis Network Video Server
US Robotics Dial Up Modem
General Devices Incorporated (GDI) VMS Modem
Highway Advisory Radio Controller
Morad Antenna
Portable Highway Advisor Radio Transmitter (HART)
Optelecom Video & Data Transmission Equipment
Deci-Mux Video Transmission Equipment
Radiant MPEG 4 Video Encoder/Decoder
Radiant Fiber Optic Transceiver
Black Box Converters
Vicon Combiners
Ethernet Switch
EDI Series Conflict Monitor
RENO A&E: Rack Mount Loop Vehicle Detectors
Concrete Universal Enclosure

Cisco SONET System
Digital Works Terminal Server
Communications Network Systems Fuse Panel
Quintim Technologies Voice-over-IP Switch
ADC Cross-connect Panels
Variable Message Signs

Attached are the proprietary justifications for each item.

Much of the equipment specified in this letter is currently used by WSDOT. In order to keep maintenance costs low, spare part inventories manageable, and training at a minimum, we are requesting that the following items be approved for proprietary purchase.

The technologies used in the above items are constantly improving. As such, we are continually evaluating the needs of our system and the equipment that best serves those needs. In our desire to maintain a competitive atmosphere, we ask that any long-term approval expire at the end of biennium. Next biennium we will apply for another long-term proprietary approval as appropriate.

If you have any questions or need additional information on this matter, please contact Michael Forbis or Steve Strand.

JMS/sms
Attachment: ITS Proprietary Justifications

cc: Project File
Day File (w/o attachments)

Proprietary Justifications

170 CPU Module - 68HC11F1 MPU

The 170E CPU module - 68HC11F1 MPU is needed for compatibility with our standard 170 controllers and WSDOT NW Region traffic data accumulation and ramp metering software.

Cohu Camera Assembly

The I-view series (current model # 3955) consists of a camera, pan/tilt unit, and control receiver. The existing TSMC software can only control Cohu control receivers. This product is required for synchronization with our existing system. Other systems are not compatible because of control protocol issues.

Similarly, the Cohu I-dome series (current model #3920), which is used for under structure mounting, is also required for synchronization.

Network Video Server (AXIS 2400/2401)

AXIS 2400/2401 high-performance video servers transform analog video into high quality digital images, which can be transmitted over intranet networks or the Internet. This equipment is required for compatibility with our existing camera controller system. It can connect via a modem to the Internet or directly to a local area network.

Dial-Up Modem

The US Robotics Sportster V.90 modem integrated with the AXIS 2401 network video server will provide high quality transmission video/data through telephone or network connection. The US Robotics Sportster V.90 modem is required for compatibility reasons; different brands are not compatible with the AXIS video transmission servers.

General Devices Incorporated (GDI) VMS Modem

The GDI Stand-alone 9600 bps modem and Rack-mounted 9600 bps modem are used for communication between Variable Message Signs (VMS) and the Dayton Avenue TSMC. This brand is required to synchronize with existing modems.

Highway Advisory Radio Controller

We seek proprietary approval for Highway Information Systems, Inc. Black Max controllers on NW Region projects. It is in the public interest, due to high maintenance cost to operate and maintain different types of communication systems with different protocols, to standardize on one type of radio control system. In the past, the NW Region required the installation of Zetron Controllers, however these controllers are no longer manufactured. We have chosen the Highway Information Systems, Inc. Black Max as the new standard which matches the recently agreed to statewide standard. It is deemed in the public interest to use these controllers.

Highway Advisory Radio Transmitter (HART) Antenna

A Morad antenna features a low-loss, embedded, weatherproof loading coil. This product is essential for synchronization with existing Information Station Specialist transmitters and the new Highway Information Systems, Inc. Black Max radio transmitters.

Portable Highway Advisor Radio Transmitter (HART)

The "RoadRunnR" Portable Highway Advisory Radio Transmitter from ISS (Information Station Specialists) is required for compatibility reasons. This is a packaged system, which includes a transmitter, antenna system, digital message recorder, cell phone, NOAA weather/EAS receiver, wireless power, and associated equipment. WSDOT currently has this portable HART system in use. This product is required for synchronization with our TSMC existing control software. This product is also used in other locations throughout the state and is familiar to our traffic operation and maintenance personnel. Thus we have interchangeable equipment on hand and there is a reduced need for training in equipment setup and operation.

OPTELECOM Video and Data Transmitters/Receivers

This equipment carries video and/or data between a communication hub and nearby ITS devices such as camera systems and data stations. All ITS devices installed tie into our existing communication hubs, which contain Optelecom equipment. Optelecom equipment is required for synchronization with the existing NW Region communication network.

Video Transmission Equipment (Deci-Mux)

Communication Specialties Incorporated's (CSI) 10-channel digital video transmitter and 10-channel digital video receiver are required to carry video data from a communication hub to the Dayton Avenue TSMC. All existing communication hubs, including the TSMC, are equipped with Deci-Mux video transmission equipment. The continued use of Deci-Mux equipment is necessary for compatibility between the new and existing components.

MPEG 4 Encoder and Decoder

The Radiant Communications Corporation, Encoder (model V3510-T-1U) and Decoder (model V3520-R-1U) deliver video and audio at low bandwidth over telephone and DSL from the field to the Traffic Management Center. These devices work together and with existing ITS and IT infrastructures to provide a complete and operational system. By specifying this equipment, we ensure compatibility with the existing system and minimize maintenance inventory.

Fiber Optic Transceiver

The Radiant Communication Corporation, Fiber Optic Transceiver (model DL221) is essential for synchronization with the Radiant MPEG 4 equipment detailed above. This device will allow for long distance transmission of MPEG 4 video from the field, to the Traffic Management Center, over WSDOT's fiber optic network. By specifying this equipment, we ensure compatibility with the existing system and minimize maintenance inventory.

BLACK BOX RS-232/422 Converters

The RS-232/422 Converters are used for interface between data terminal equipment and data communications equipment employing serial binary data interchange. We began specifying Black Box converters after several contractors expressed difficulties in procuring compatible converters. By continuing to specify this product we limit the number of different RS-232/422 systems, maintain a reasonable spare parts inventory, and ensure compatibility with the existing systems.

VICON RS-422 Combiners

Vicon RS- 422 combiners integrated with the BLACK BOX RS-232/422 converters provide a high-speed data transfer mode for CCTV systems. Vicon RS-422 combiners were installed on one of the original SR90 communication contracts under competitive bid. This product is required for compatibility reasons. As with the 232/422 converters, we continue to specify these so we can minimize the number and types of spare parts.

Ethernet Switch

Ethernet Switches (RuggedCom units) are used in traffic signal controller cabinets for signal interconnection between traffic signals and ITS communication system. It is essential to use one type of Ethernet switch for interconnection and synchronization of multiple controllers in a coordinated systems. It is in the public interest, due to high maintenance cost to operate and maintain different communication systems with different protocols, to standardize on one type of Ethernet switch for these systems. RuggedCom switches are essential for synchronization with existing implementations.

EDI: 2010ECL Series conflict monitor

The model 2010ECL is a conflict monitor configured for operation with a 2070 Controller Unit. Conflict monitors are essential to the safe operation of traffic signals. The model 2010ECL conflict monitor is the only conflict monitor that is suitable for all the 2070 controller systems we currently install. No equally suitable alternative exists.

RENO A&E: Rack Mount Loop Vehicle Detectors

RENO A&E: Rack Mount Loop Vehicle Detectors C-1100 (2) Channel Solid State Rack Mount is the only loop amplifier that will not be affected by an electro-magnetic field (EMF). EMF in long loop lead in runs result in false calls (false vehicle detection) and will result in poor controller operation. Many NWR signal and ITS systems have long lead-ins, over 500 feet. These systems are impacted by EMF. The Reno C-1100 loop amplifier is the only loop amplifier not affected by EMF. No equally suitable alternative exists.

Concrete Universal Enclosure (CUE)

Emerson Network Power F2004102

The Emerson Network Power, F2004102 is a pre-cast concrete walk-in building. This product is essential for synchronization with our existing communications and backup power systems. We have carefully specified the CUE to be compatible with our existing communication hubs. The CUE will interface with our existing SONET communication system and portable backup generators. The CUE has been certified and approved by Washington State L&I for the intended purpose. The CUE includes two 24,000-BTU/Hr air conditioners with integrated heater(s), UPS, 48 VDC UPS, Generator Control Panel, sump pump, and an alarm package that includes intrusion, high water, AC fail, and high temperature alarms. The CUE is required to maintain compatibility with our existing infrastructure and to provide a high-level of safety for our maintenance personnel while working in confined spaces.

Synchronous Optical NETwork (SONET) System

Cisco ONS 15454 MSPP SONET

The Cisco ONS 15454 MSPP SONET is an OC-48 add/drop multiplexer (ADM). This system is essential for synchronization with our existing Cisco OC-48 system, multiple existing Ethernet systems and existing WSDOT IT switches and routers. The unit is expandable and configurable to allow direct Ethernet and Packet over SONET interaction. The ONS 15454 carries traditional time-division multiplexing (TDM) and high-speed data traffic over a single mode fiber optic system. The Cisco product has been chosen to provide compatibility with existing IT infrastructure because the planned use of the system will be primarily for packet data transport. No other equally suitable alternative exists.

Terminal Server

Digital Networks "DECserver" - Various Models

Digital Networks "DEC" terminal servers are essential for synchronization with our existing DEC VAX computer system. With our implementation of Packet over SONET data transmission, a means of communicating with legacy serial data is required. Use of other vendor products would require the implementation of costly and cumbersome system workarounds in order to provide acceptable functionality. In order to ensure satisfactory and reliable asynchronous serial communications over local or wide area Ethernet networks, this vendor's products are required.

Fuse Panel

Communications Network Systems, Inc. KTK Fuse/Alarm Panel

The KTK Fuse/Alarm Panel is essential due to this product being the only workable alternative. Implementation of the Cisco SONET equipment requires an alarm and fuse panel with sufficient capacity to power the equipment. Most communication fuse panels provide fusing capacity to only 15-ampere capacity. The KTK panel provides capacity to 30 ampere. This unit is the model required by the Cisco equipment to synchronize with the proposed equipment. No other equally suitable alternative exists.

Voice-over-IP Switch

Quintim Technologies "Tenor AS and AX Series", Various Models

Quintim Technologies "Tenor AS and AX Series" equipment is essential for synchronization with our SONET communications system. Experience has shown that use of VoIP equipment from diverse manufacturers often results in degraded, unreliable or unusable operation. The Quintim Technologies equipments provide a reliable source of transmission of voice or voice grade circuits on packet over SONET optical systems. We were able to test this equipment and verify compatibility with the existing devices. This equipment will provide good synchronization with existing ITS systems. No other equally suitable alternative exists.

Cross-connect Panel

ADC DSX Panels

It is in the public's interest to provide ADC DSX Panels due to a significant investment being made in the use of this item through training, parts, maintenance familiarity, and equipment. We are requiring the ADC panels to match existing panels in existing hubs. Use of a new vendor will require new mounting shelves and create confusion in the communication Hubs. Our only option was to replace all of the existing panels. It was determined that this would significantly increase cost. To synchronize with the installations in 16 existing Hubs we are continuing require this model of equipment.

Variable Message Sign

Daktronics, Inc
Skyline Products, Inc.
Mark IV Industries, Ltd.

It is in the public's interest to maintain and operate only a limited number of variable message signs due to the significant investment required in the use of this item reflected by training, parts, maintenance familiarity, equipment and warranty. WSDOT adopted the NTCIP DMS communication standard in hopes of using completely open VMS procurement, however, the "NTCIP Standard" has been interpreted and implemented by each vendor in ways that prohibit interoperability. WSDOT has written software to support NTCIP and has had to modify the system for each new vendor. We have reached a limit, and cannot add any more driver software. For this reason, all near term future projects shall require procurement of signs manufactured by one of the above vendors to ensure synchronization with the existing Traffic Management System (TMS).